WHAT IS CLAIMED IS:

1. A duobinary optical transmission apparatus comprising:

a light source for outputting an optical carrier;

a Non-Return to Zero (NRZ) optical signal generating section for receiving an NRZ electrical signal, and for modulating the optical carrier from the light source into an NRZ optical signal according to said NRZ electrical signal; and

a duobinary optical signal generating section for receiving said NRZ electrical signal and modulating said NRZ optical signal into a duobinary optical signal.

2. The apparatus according to claim 1, wherein the light source comprises a laser diode.

3. The apparatus according to claim 1, wherein the NRZ optical signal generating section comprises a pair of first modulator driving amplifiers for amplifying and outputting the NRZ electrical signal, and a first interferometer type optical intensity modulator for modulating an intensity of said optical carrier according to driving signals inputted from said pair of first modulator driving amplifiers.

4. The apparatus according to claim 3, wherein said first interferometer type optical intensity modulator comprises a Mach-Zehnder interference type optical phase modulator.

5. The apparatus according to claim 1, wherein the duobinary optical generating section 200 comprises a T-flip-flop for separating by odd or even positions a group of bits in the inputted NRZ electrical signal;

a pair of second modulators for amplifying and outputting the signal from the T flip-flop; and

a second interference type optical phase modulator for modulating a phase of said NRZ optical signal according to driving signals from said pair of second modulators.

6. The apparatus according to claim 1, wherein the NRZ optical signal generating section is adapted for receiving the NRZ electrical signal from a pulse pattern generator.

7. The apparatus according to claim 6, wherein said apparatus does not require a precoder for encoding the NRZ electrical signal received from the pulse pattern generator.

8. The apparatus according to claim 6, wherein the adaption of the NRZ optical signal generating section to receive the NRZ electrical signal does not require low pass electrical filters.

9. A duobinary optical transmission apparatus comprising:

a light source for outputting an optical carrier;

a first modulator driving amplifier unit for receiving, amplifying, and then outputting at least one NRZ electrical signal;

an optical intensity modulator for modulating the intensity of the optical carrier according to a driving signal inputted from the first modulator driving amplifier unit;

a T-flip-flop separating a group of '1' in odd positions or even positions in the sequence from the NRZ electrical signal;

a second modulator driving amplifier unit for amplifying and outputting at least one signal outputted from the T-flip-flop; and

an optical phase modulator for modulating the phase of the NRZ optical signal according to at least one driving signal transmitted from the second modulator driving amplifier unit.

10. A duobinary optical transmission apparatus as claimed in claim 9, wherein each of the optical intensity modulator and the optical phase modulator comprises a Mach-Zehnder interferometer type optical modulator.

11. A duobinary optical transmission apparatus as claimed in claim 10, wherein the Mach-Zehnder interferometer type optical modulator is a dual-armed Z-cut Mach-Zehnder interferometer type optical modulator.

12. A duobinary optical transmission apparatus as claimed in claim 11, wherein each of the first and second modulator driving amplifier units includes a pair of modulator driving amplifiers, each of which amplifies the NRZ electrical signal inputted to itself.

13. A duobinary optical transmission apparatus as claimed in claim 10, wherein the Mach-Zehnder interferometer type optical modulator is a single-armed X-cut Mach-Zehnder interferometer type optical modulator.

14. A duobinary optical transmission apparatus as claimed in claim 9, wherein the group of '1' in odd positions in the sequence and the group of '1' in even positions in the sequence, which have been separated from the NRZ electrical signal, respectively, have a phase difference of 'π' with respect to each other.

15. A method for duobinary optical transmission comprising the steps of:

(a) outputting a light source as an optical carrier;

(b) receiving an NRZ electrical signal, and modulating the optical carrier from the light source into an NRZ optical signal according to said NRZ electrical signal by providing a Non-Return to Zero (NRZ) optical signal generating section; and

(c) receiving said NRZ electrical signal and modulating said NRZ optical signal into a duobinary optical signal by a duobinary optical signal generating section.

16. The method according to claim 15, wherein the light source used in step (a) comprises a laser diode.

17. The method according to claim 15, wherein the NRZ optical signal generating section used in step (b) comprises a pair of first modulator driving amplifiers for amplifying and outputting the NRZ electrical signal, and a first interferometer type optical intensity modulator for modulating an intensity of said optical carrier according to driving signals inputted from said pair of first modulator driving amplifiers.

18. The method according to claim 17, wherein said first interferometer type optical intensity modulator comprises a Mach-Zehnder interference type optical phase modulator.

19. The method according to claim 15, wherein the duobinary optical generating section used in step (c) comprises a T-flip-flop for separating by odd or even positions a group of bits in the inputted NRZ electrical signal;

a pair of second modulators for amplifying and outputting the signal from the T flip-flop; and

a second interference type optical phase modulator for modulating a phase of said NRZ optical signal according to driving signals from said pair of second modulators.

20. The method according to claim 15, wherein the NRZ optical signal generating section in step (b) is adapted for receiving the NRZ electrical signal from a pulse pattern generator without using a precoder for encoding and without the NRZ optical signal generator using low pass electrical filters to receive the NRZ electrical signal.